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QUADRILATERAL

Part-IV

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Agenda : Quadrilateral Part 4

12 Quality Questions ↑↑

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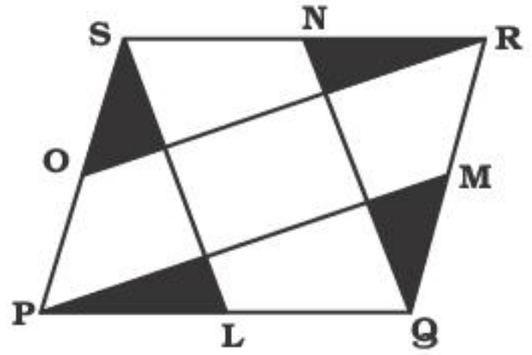
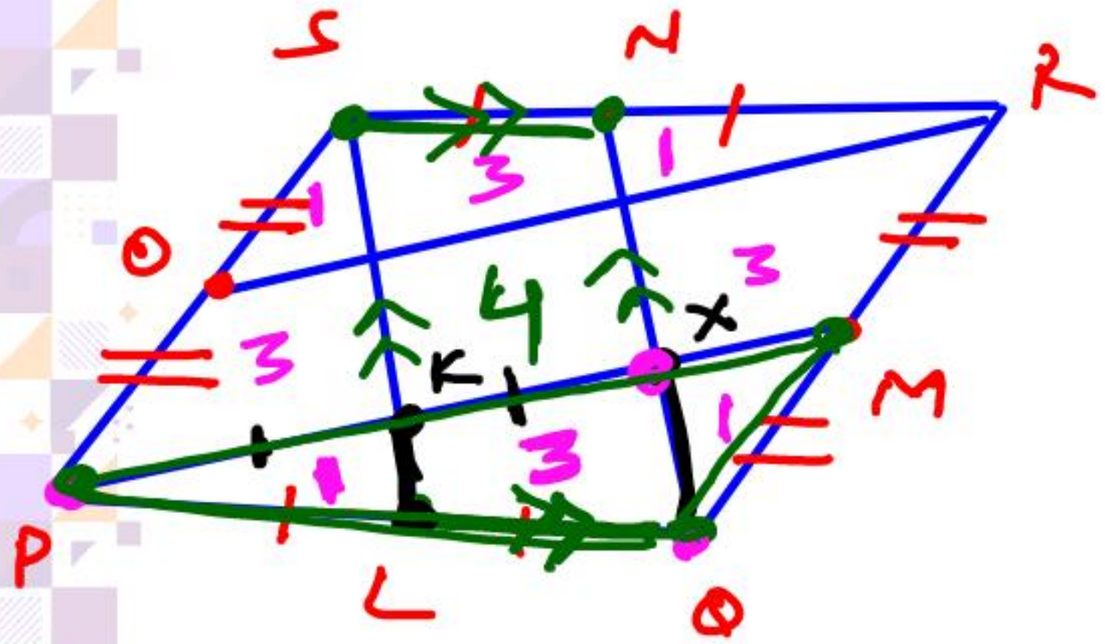
PRACTICE QUESTIONS

2 min

Q25. In the parallelogram PQRS, L, M, N and O are mid points of sides PQ, QR, RS and SP respectively. PM, QN, RO and SL are joined. Find the ratio of the area of the darked region to the area the parallelogram PQRS.

(a) 1/5
(b) 1/4
(c) 4/15
(d) 1/6





SNQL is a ||gm

ΔPXQ

$KL \parallel XQ$

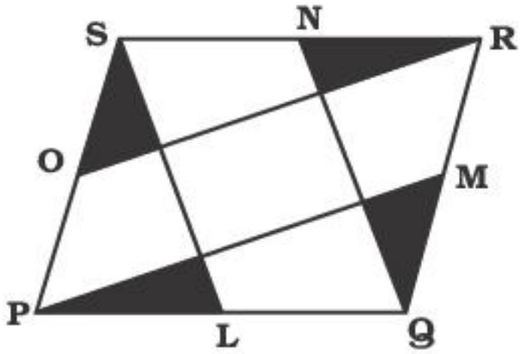
K is m.p of PX

$$\frac{\text{area } \Delta PMQ}{\text{area of PQRS}} = \frac{1}{4}$$

$$\frac{\text{area of } \Delta PKL}{\text{area of } \Delta PXQ} = \frac{1}{4}$$

$$\frac{4}{20} = \frac{1}{5}$$

Ans. (a)



Q26. ABCD is a parallelogram in which O is the intersection point of its diagonals. P is a point on DO. If the area of ΔAPB is 24.5 cm^2, then find the area of ΔBPC.

(a) 19.5 cm^2

(b) 49 cm^2

(c) 24.5 cm^2

(d) Cannot be determined

Ans. (c)

Q27. If area of parallelogram is A whose sides are a and b and area of rectangle is B whose sides are a and b then –

(A) $A > B$

(B) $A = B$

(C) $A < B$

(D) $A \geq B$

Ans. (c)

Q28. ABCD is a rectangle in which the ratio of the length of AB and BC is 3 : 2. If P is the mid-point of AB, then the value of sin ∠CPB is:

(a) $\frac{3}{5}$ (b) $\frac{2}{5}$ (c) $\frac{3}{4}$ (d) $\frac{4}{5}$

Ans. (d)

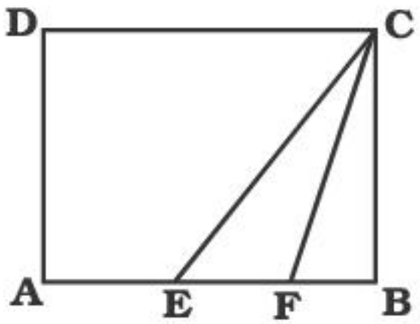
Q29. In the below diagram, ABCD is a rectangle with AE = 2EF = 3FB. What is the ratio of the area of the rectangle to that of the triangle CEF?

(a) 11 : 3

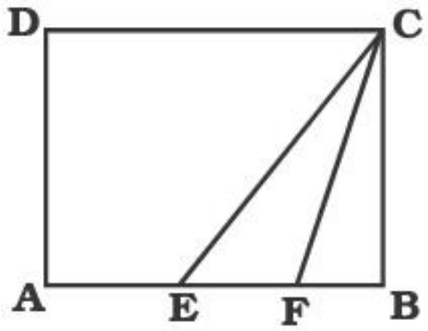
(b) 22 : 3

(c) 11 : 6

(d) None of these



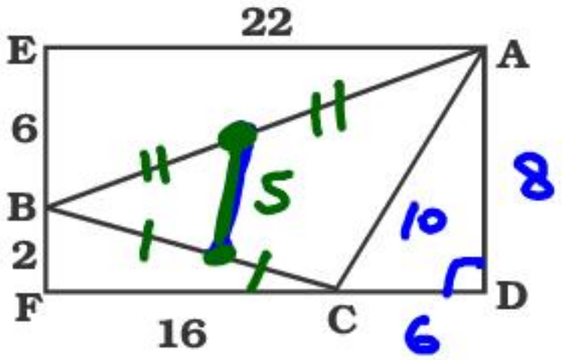
Ans. (b)



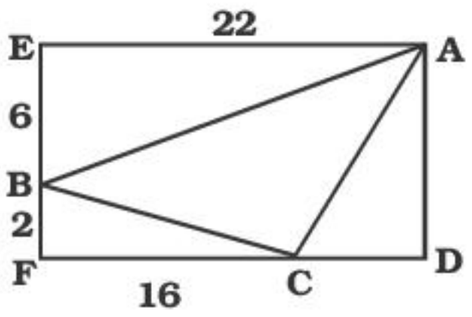
75sec

Q30. In the given figure. EADF is a rectangle and ABC is a triangle whose vertices lie on the sides of EADF. AE = 22, BE = 6 CF = 16 and BF = 2. Find the length of the line joining the mid-points to the side AB and BC

(a) $4\sqrt{2}$
(b) 5
(c) 3.5
(d) None of these



Ans. (b)



2 min

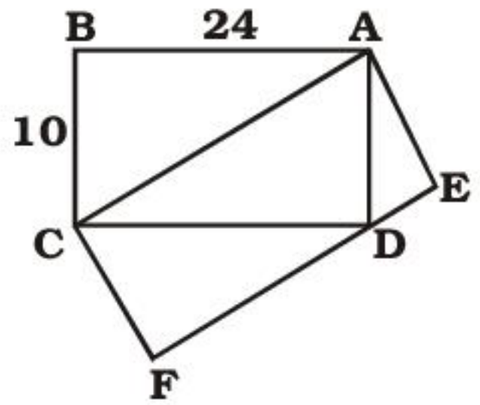
Q31. In the given fig., ABCD is a rectangle of dimensions 24 units and 10 units. AEFC is a rectangle drawn in such a way that diagonal AC of the first rectangle is one side and side oppsoite to it is touching the first rectangle at D as shows in the figure given above. What is the area of ΔAED.

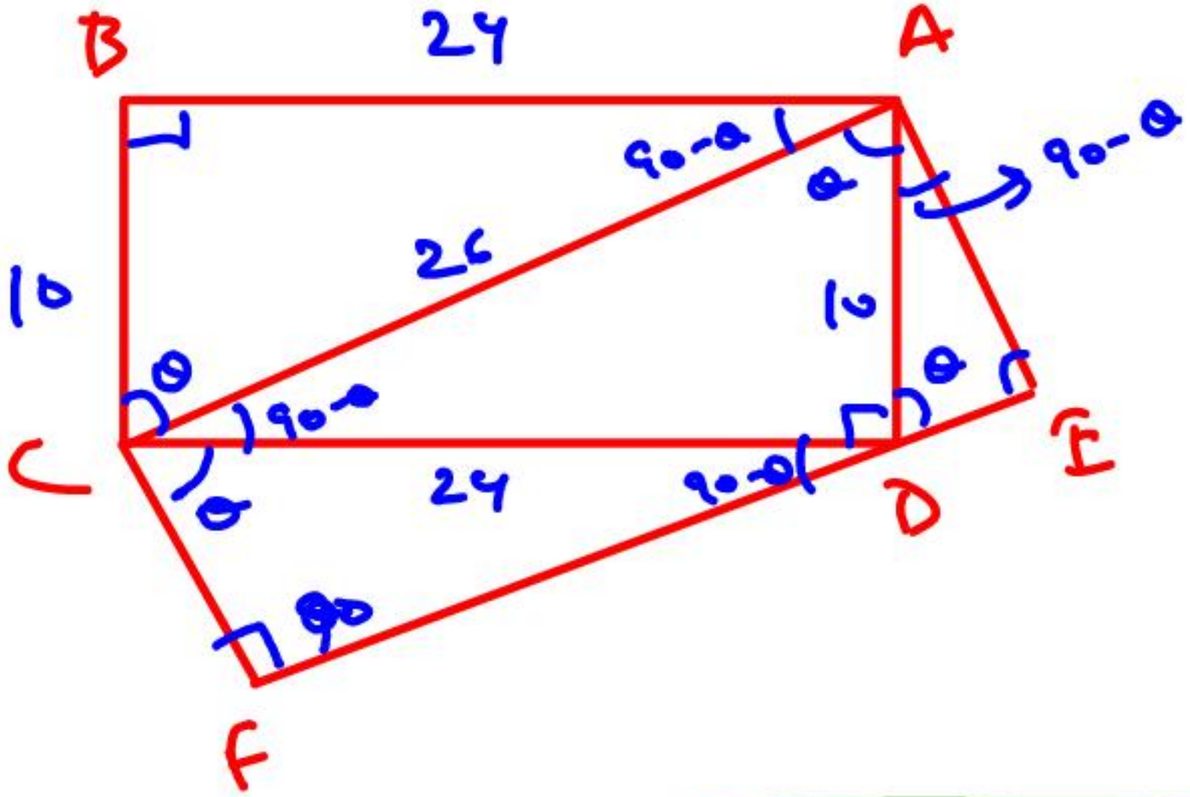
(a) $\frac{3000}{169}$ sq. unit

(b) $\frac{6000}{169}$ sq. unit

(c) $\frac{1500}{169}$ sq. unit

(d) $\frac{2700}{169}$ sq. unit





$\Delta ABC \sim \Delta AED$

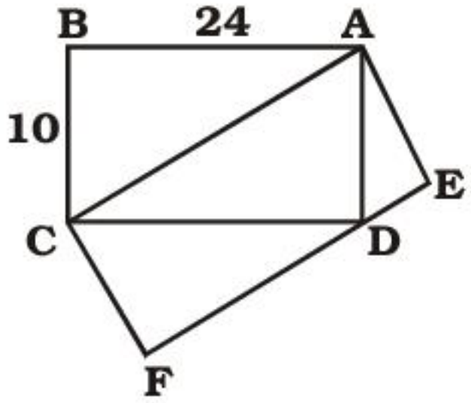
$$\frac{24}{AE} = \frac{10}{ED} = \frac{26}{10}$$

$$ED = \frac{50}{13}$$

$$AE = \frac{120}{13}$$

$$\text{Area of } \Delta AED = \frac{1}{2} \cdot \frac{120}{13} \cdot \frac{50}{13}$$

Ans. (a)



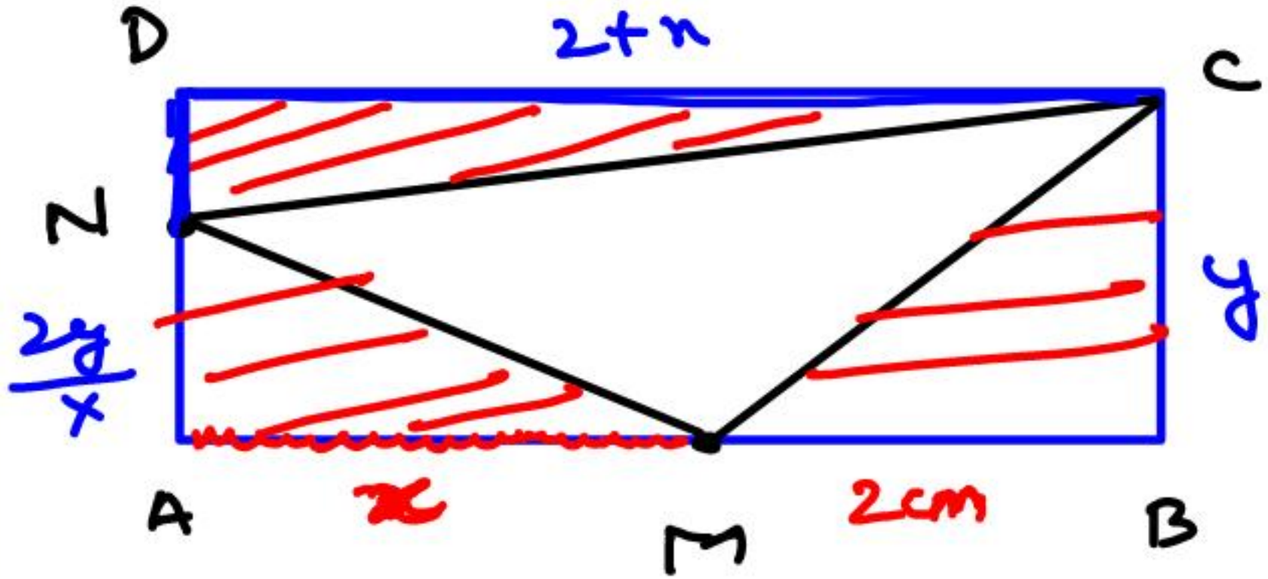
Q32. ABCD is a rectangle, there are two points M and N on side AB and AD such that area of triangles MAN, CDN and MBC are equal. If the length of BM is 2 cm, find the length of AM.

(a) $2+\sqrt{5}$ cm

(b) $1+\sqrt{5}$ cm

(c) $1+2\sqrt{5}$ cm

(d) $3+\sqrt{5}$ cm



$2y = x \cdot AN$

$AN = \frac{2y}{x}$

$DN = y - \frac{2y}{x}$

$CD = 2+x$

$$(2+x)\left(y-\frac{2y}{x}\right) = 2y$$

$$(2+x)\left(1-\frac{2}{x}\right) = 2$$

$$2 - \frac{4}{x} + x - 2 = 2$$

$$-4 + x^2 - 2x = 0$$

$$x^2 - 2x - 4 = 0$$

$$x = \frac{2 \pm \sqrt{20}}{2}$$

$$x = 1 + \sqrt{5}$$

Ans. (b)

Q33. If l, b and p be the length, breadth and perimeter of a rectangle and b, l and p are in GP (in order) then $\frac{l}{b}$

(a) $2 : 1$

(b) $\left(\sqrt{3}-1\right) : 1$

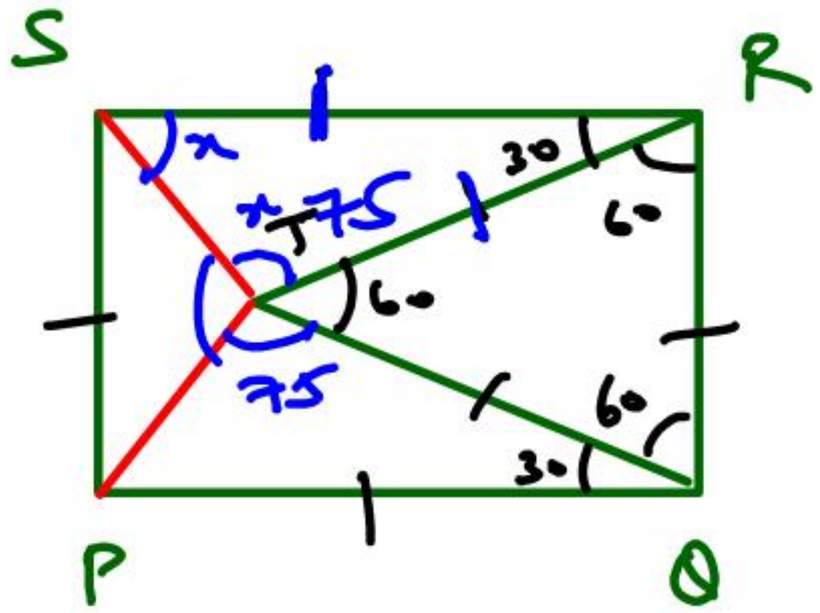
(c) $\left(\sqrt{3}+1\right) : 1$

(d) $2 : \sqrt{3}$

Ans. (c)

Q34. In a square PQRS, an equilateral triangle ΔTQR is formed, then m ∠PTS-

(A) 75° (B) 90° (C) 120° (D) 150°



$30 + 2x = 180$

$x = 75$

$75 + 75 + 60 + \angle PTS = 360$

$\angle PTS = 15^\circ$

Ans. (d)

Q35. Inside a square ABCD, ΔBEC is an equilateral triangle. If CE and BD intersect at O, then $\angle BOC$ is equal to :

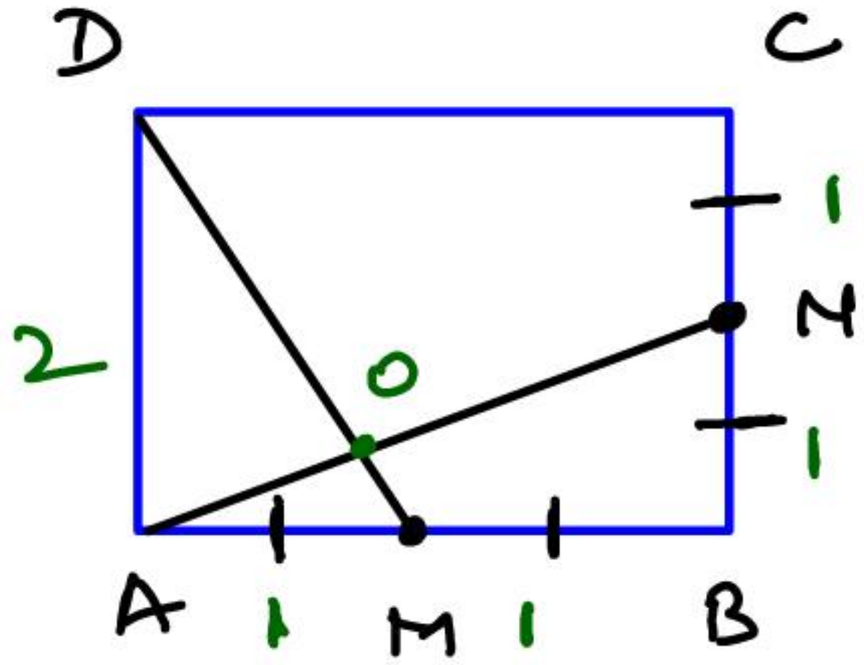
(a) $60°$ (b) $75°$ (c) $90°$ (d) $120°$

Ans. (b)

Q36. ABCD is a square, M is mid-point of AB and N is mid-point of BC. Join DM and AN which meet at O. Therefore, which is true in the following ?

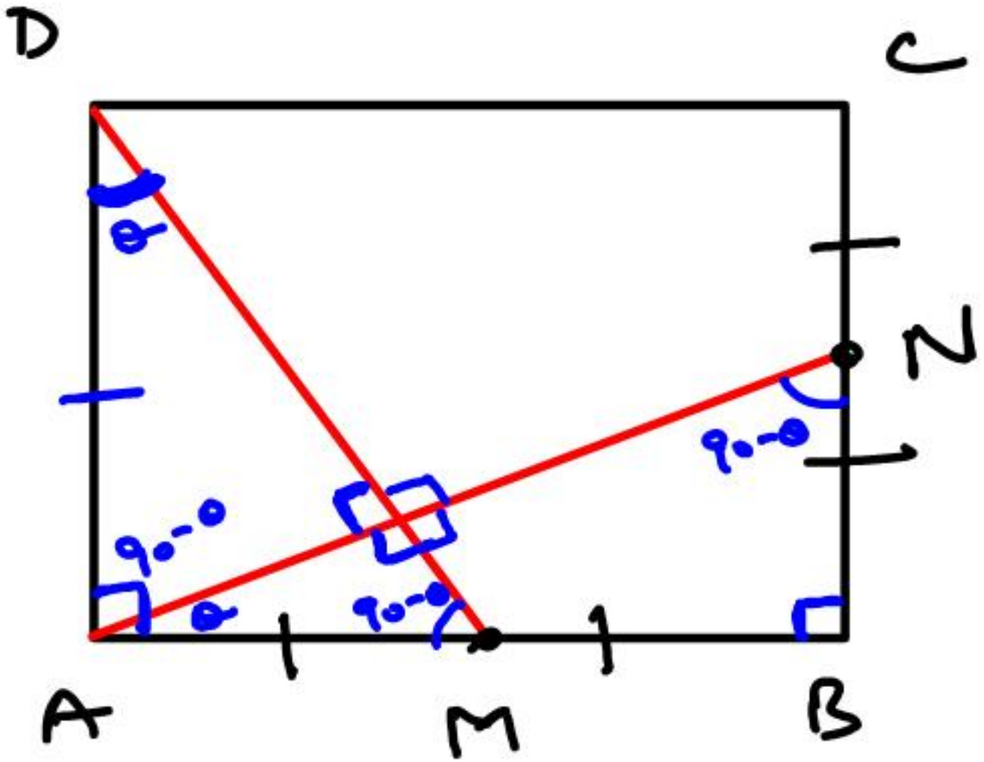
(a) OA : OM = 1 : 2 (b) AN = MD

(c) ∠ADM = ∠ANB (d) ∠AMD = ∠BAN



$AN = \sqrt{2^2+1^2} = \sqrt{5}$

$DM = \sqrt{2^2+1^2} = \sqrt{5}$



$\Delta DAM \cong \Delta ABN$

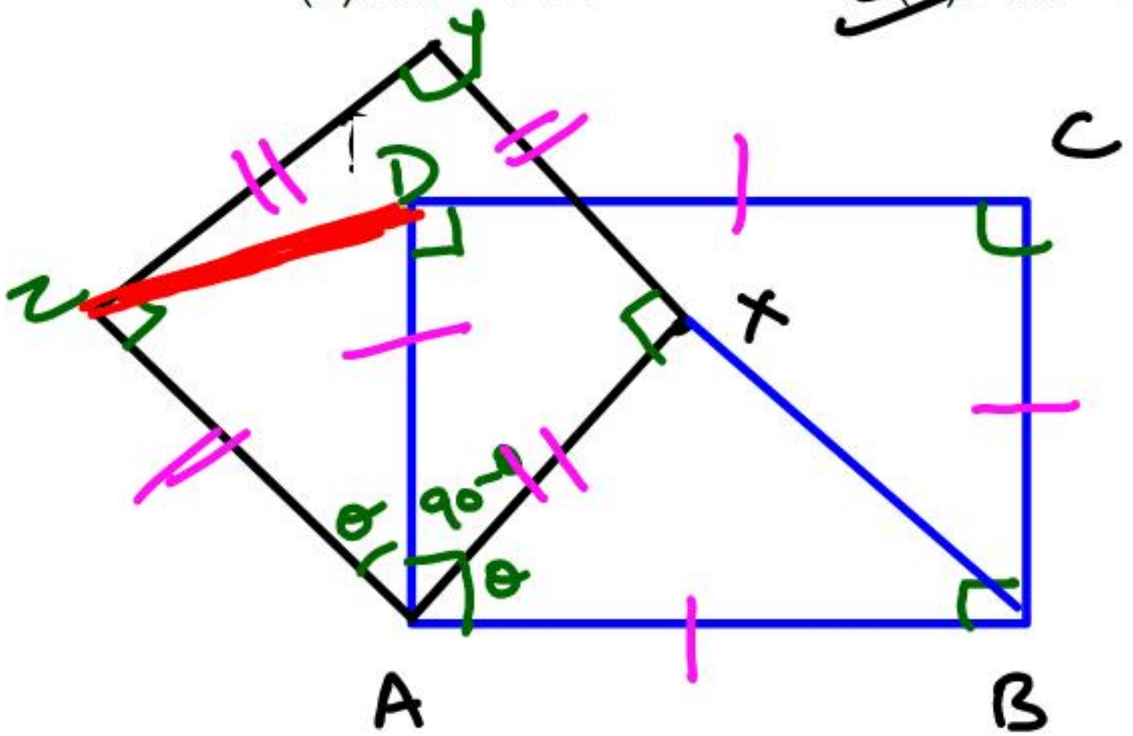
Ans. (b)

90 sec

Q37. Let X be any point within a square ABCD. On AX a square AXYZ is described such that D is within it. Which one of the following is correct?

(a) AX = DZ (b) ∠ADZ = ∠BAX

(c) AD = DZ (d) BX = DZ



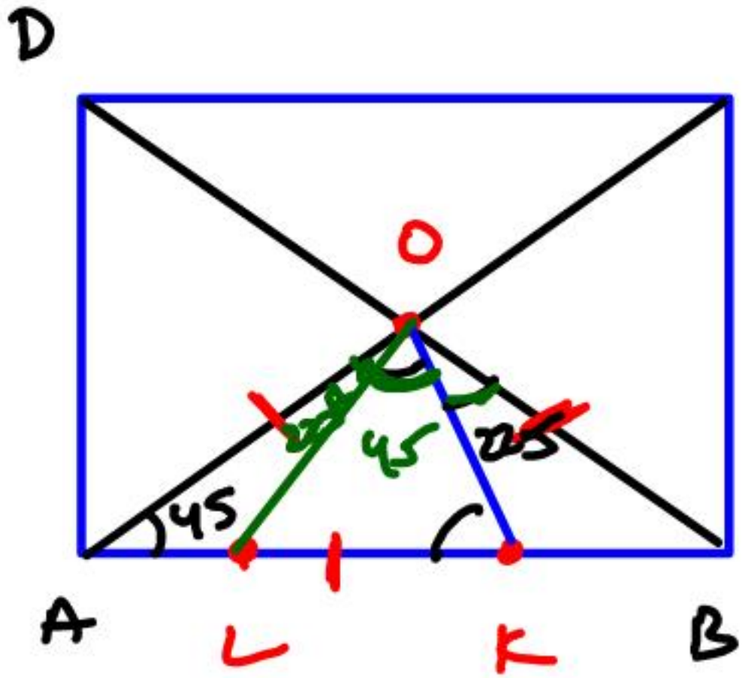
C

$\Delta DAZ \cong \Delta BAX$

Ans. (d)

Q38. ABCD is a square. The diagonals AC and BD meet at O let K, L be the points on AB such that AO = AK and BO = BL. If $\theta = \angle LOK$, then what is the value of $\tan\theta$?

(a) $\frac{1}{\sqrt{3}}$ (b) $\sqrt{3}$ (c) 1 (d) $\frac{1}{2}$



$\triangle AOK$

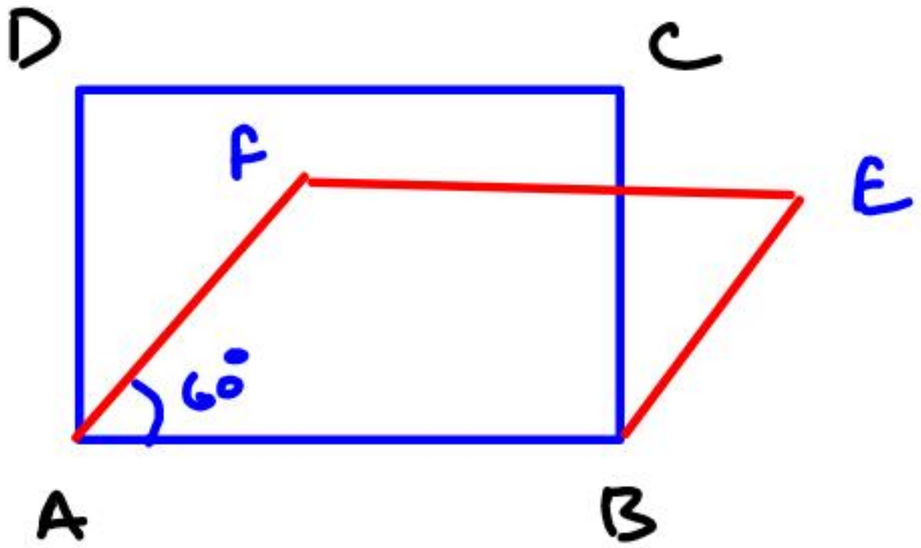
$45 + 2\angle AOK = 180$

$\angle AOK = 67.5^\circ$

Ans. (c)

Q39. A square and a rhombus have the same base and the rhombus is inclined at 60°. What is the ratio of the area of the square to the area of the rhombus:

(a) 1 : 1 (b) $\sqrt{2}$: 1 (c) 2 : 1 (d) 2 : $\sqrt{3}$



Area of square $= s^2$

Area of Rhombus $= s^2 \sin\theta$

$$\frac{s^2}{s^2 \sin\theta} = \operatorname{cosec}\theta$$

$\operatorname{cosec} 60°$

$2 : \sqrt{3}$

Ans. (d)

Ans

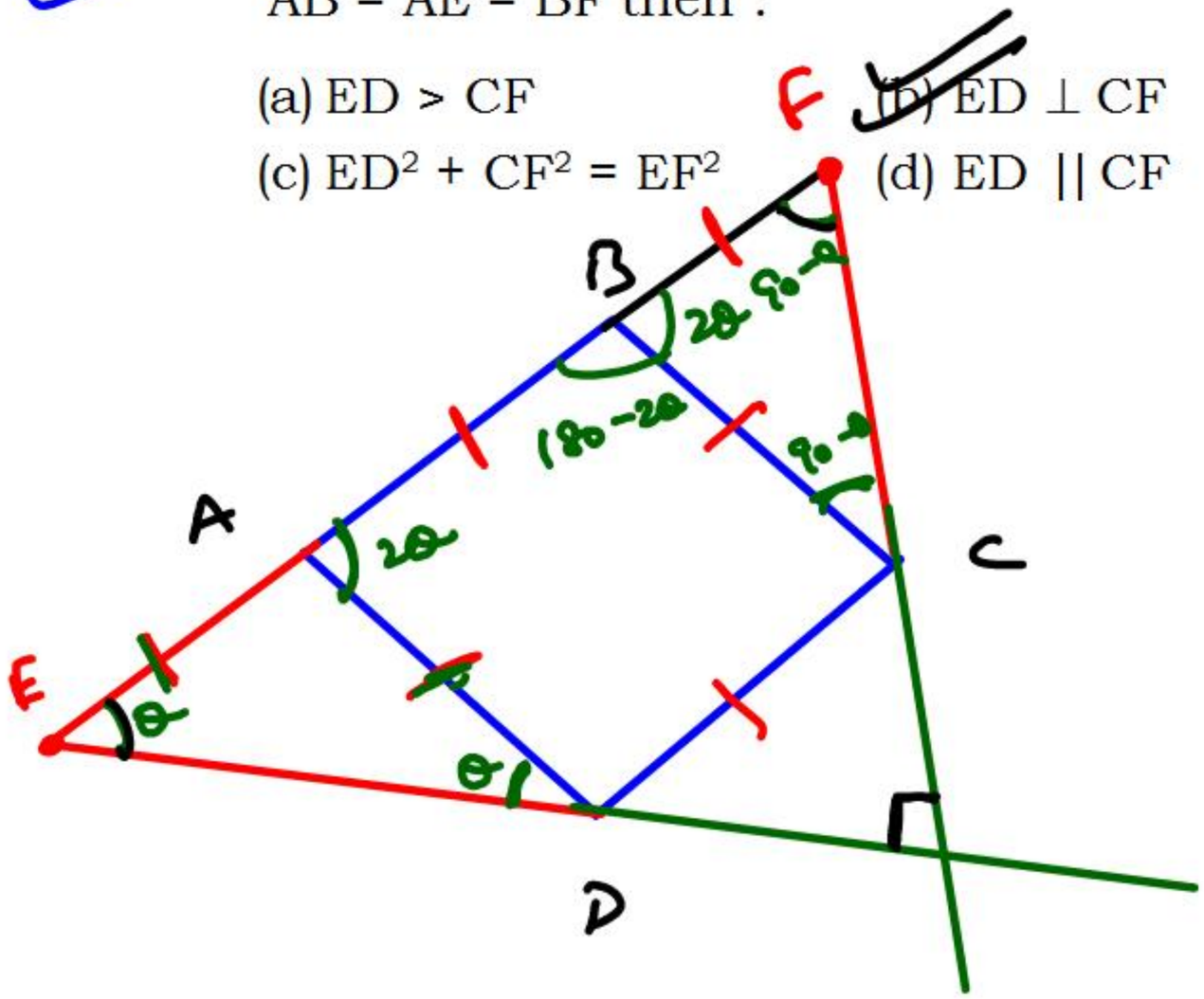
Q40. ABCD is a rhombus, AB is produced to F and BA is produced to E such that AB = AE = BF then :

(a) ED > CF

(b) ED ⊥ CF

(c) $ED^2 + CF^2 = EF^2$

(d) ED || CF



Ans. (b)

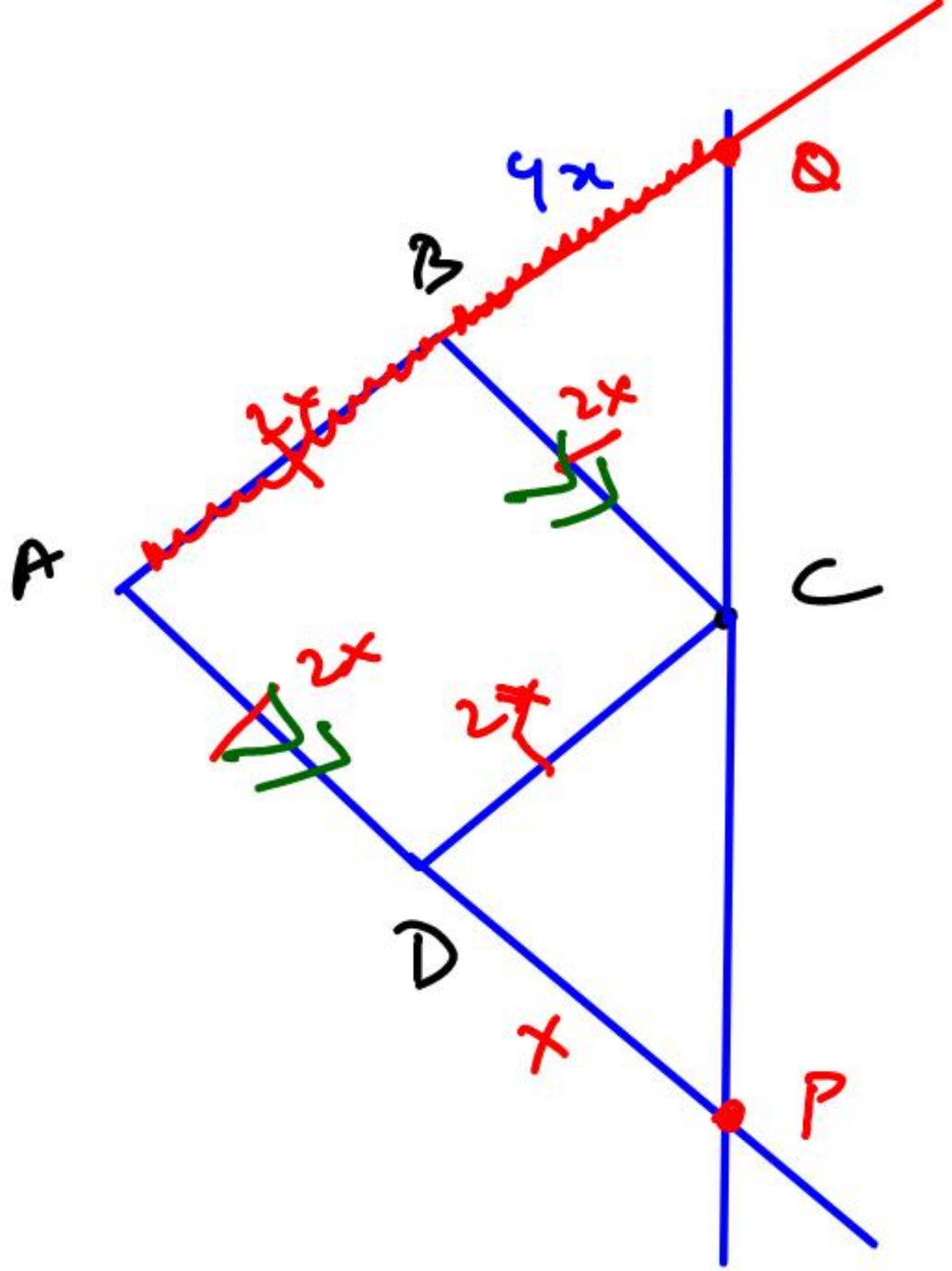
Q41. ABCD is a rhombus. A straight line through C cuts AD produced at P and AB produced at Q. If DP = $\frac{1}{2}$ AB, then the ratio of the length of BQ and AB is :

(a) 1 : 1
(b) 2 : 1
(c) 1 : 2
(d) None of the above

QB : AB

4x : 2x

2 : 1



$\triangle QBC \sim \triangle QAP$

$$\frac{QB}{QA} = \frac{BC}{AP}$$

$$\frac{QB}{QB+2x} = \frac{2}{3}$$

$$QB = 4x$$

Ans. (b)

Q42. ABCD is a trapezium in which AB = CD, AD || BC, AD = 5 cm and BC = 9 cm. Therefore, If area of ABCD is 35 cm^2, then find the length of CD?

(A) $\sqrt{29}$ cm (B) 5 cm (C) 6 cm (D) $\sqrt{21}$ cm

Ans. (a)

Q43. If ABCD is trapezium in which AB || DC, AC and BD cut each other at E, then-

(A) $DE \cdot EA = EC \cdot BC$

(B) $DE \cdot EA = EC \cdot AB$

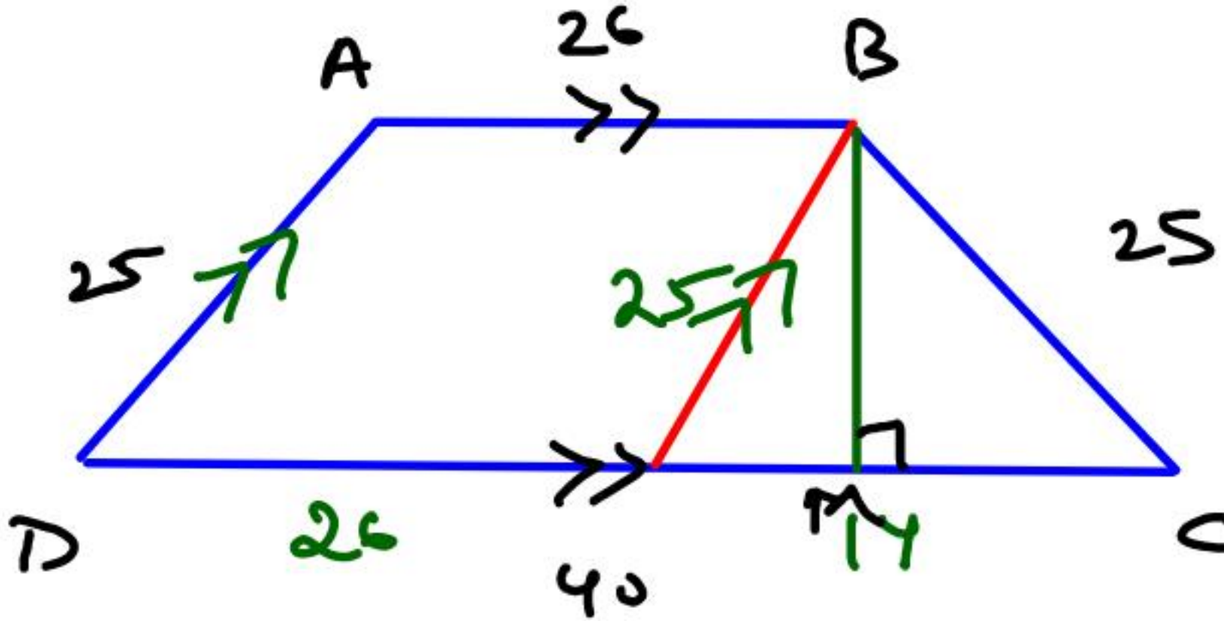
(C) $DE \cdot EA = EC \cdot DC$

(D) $DE \cdot EA = EB \cdot EC$

Ans. (d)

Q44. Find the area of a trapezium ABCD in which AB || DC, AB = 26cm, BC = 25 cm, CD = 40 cm and DA = 25 cm.

(a) 648 cm²
(b) 792 cm²
(c) 660 cm²
(d) 798 cm²



$s = \frac{25+25+14}{2}$

$s = 32$

$\sqrt{32 \cdot 7 \cdot 7 \cdot 18} = \frac{1}{2} \cdot 14 \cdot BM$

$7 \cdot 24 = 7 \cdot BM$

$BM = 24$

$\frac{1}{2}(26+40)24^{12}$

$= 66 + 12$

$= 792 cm^2$

Ans. (b)

Q45. ABCD is a trapezium with parallel sides AB = 2 cm, and DC 3 cm E and F are the mid-points of the non-parallel sides. The ratio of area of ABFE of area of EFCD is :

(a) 9 : 10
(b) 8 : 9
(c) 9 : 11
(d) 11 : 9

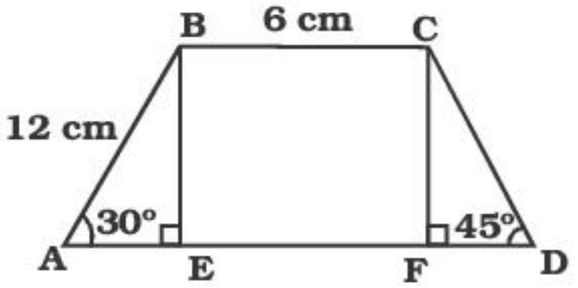
Ans. (c)

Q46. In trapezium ABCD, AB || DC and DC = 2 AB. EF drawn parallel to AB cuts AD at F and BC at E such that $\frac{BE}{EC} = \frac{3}{4}$ Diagonal DB intersect EF at G. Find $\frac{AB}{FE}$

(a) $\frac{10}{7}$ (b) $\frac{4}{7}$ (c) $\frac{3}{7}$ (d) $\frac{7}{10}$

Ans. (a)

Q47. In a trapezium ABCD, $\angle BAE = 30^\circ$, $\angle CDF = 45^\circ$, BC = 6 cm and AB = 12 cm. Find the area of ABCD.



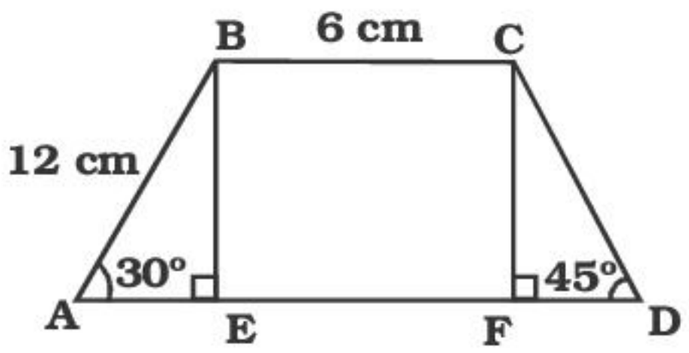
(a) $18(3 + \sqrt{3})$ cm²

(b) $36\sqrt{3}$ cm²

(c) $12(3 + 2\sqrt{3})$ cm²

(d) None of these

Ans. (a)



Q48. ABCD is a parallelogram. If the bisectors of the $\angle A$ and $\angle C$ meet the diagonal BD at points P and Q respectively, then which one of the following is correct?

(a) PCQA is a straight line

(b) ΔAPQ **is similar to** ΔCQP

(c) AP = CP

(d) AP = AQ

Ans. (b)

Q49. ABCD is a parallelogram, E and F are the points on the diagonal AC such that AE = FC, then quadrilateral BEDF is a :

(a) Trapezium
(b) Parallelogram
(c) Square
(d) None of these

Ans. (b)

Q50. ABCD is a parallelogram and Q and R are circumcentre of ΔABC and ΔADC, then AQCR will be-

(A) Rectangle (B) Rhombus

(C) Trapezium (D) Square

Ans. (b)